

Appl. No.: 10/542,720
Amtd. Dated November 27, 2007
Reply to Office Action of July 27, 2007

Amendment to the Claims:

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) An insulated gate device comprising a gate connected to a gate terminal and having a variable input capacitance means adjacent to the gate terminal, said means comprising a variable capacitance such that as the device is switched between an off state and an on state, a ratio (C_{fiss}/C_{iiss}) between a final value of the capacitance (C_{fiss}) when the device is on and an initial value of the capacitance (C_{iiss}) when the device is off is $1 < C_{fiss}/C_{iiss} < 2.0$.

2. (Original) A device as claimed in claim 1 comprising a power metal oxide silicon field effect transistor (MOSFET).

3. (Previously Presented) A device as claimed in claim 1 wherein said variable input capacitance means provides a capacitance such that the ratio (C_{fiss}/C_{iiss}) is $1 < C_{fiss}/C_{iiss} < 1.5$.

4. (Currently Amended) A device as claimed in claim 3 wherein said variable input capacitance means provides a capacitance such that the ratio is $1 < C_{fiss}/C_{iiss} < 1.2$ substantially equal to 1.

5. (Previously Presented) A device as claimed in claim 1, wherein said variable input capacitance means comprises a capacitor between the gate terminal and the gate of the device.

6. (Previously Presented) A device as claimed in claim 2 wherein the MOSFET has a vertical structure in that the gate and a source of the device are provided on one face of a chip body of the device and a drain of the MOSFET is provided on an opposite face of the body, wherein said variable input capacitance means comprises a capacitor between the gate terminal and the gate of the device.

Appl. No.: 10/542,720
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7. (Original) A device as claimed in claim 6 wherein the capacitor is integrated on the chip body.

8. (Original) A device as claimed in claim 7 wherein the capacitor is superimposed on the gate of the MOSFET.

9. (Previously Presented) A device as claimed in claim 5 wherein the capacitor is a discrete component connected in series between the gate and the gate terminal and packaged in the same package.

10. (Previously Presented) A device as claimed in claim 5 wherein the gate is connected directly to a fourth terminal of the device.

11. (Original) A device as claimed in claim 9 wherein biasing resistors connected to the gate are included in the same package.

12. (Previously Presented) A device as claimed in claim 1 wherein said variable input capacitance means comprises an insulation layer at the gate of the device.

13. (Previously Presented) A device as claimed in claim 1 wherein said variable capacitance means is comprised in said gate.

14. (Canceled)

15. (Previously Presented) An insulated gate device comprising a gate, the device having a capacitance at the gate, where a value of the capacitance is a function of an effective thickness of an insulation layer at the gate, the effective thickness of the insulation layer being selected to ensure that a first ratio between a final value of the capacitance when the device is on and an initial value of the capacitance when the device is off is smaller or equal to a second ratio of a maximum charge receivable on the gate and a charge required to reach a threshold voltage of the

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gate of the device.

16. (Previously Presented) An insulated gate device comprising a gate, the device having a capacitance at the gate, where a value of the capacitance is a function of an effective thickness of an insulation layer at the gate, the effective thickness of the insulation layer being selected to ensure that a first ratio between a final value of the capacitance when the device is on and an initial value of the capacitance when the device is off is smaller or equal to a second ratio of a maximum voltage applicable to the gate and a threshold voltage required on the gate to switch the device on.

17. (Previously Presented) An insulated gate device comprising a gate and an insulation layer at the gate, the layer having an effective thickness (d) of at least a quotient of a device parameter and a ratio of maximum charge accommodatable on the gate and a minimum charge required on the gate for complete switching, minus one (1), the device parameter being equal to the product of an effective gate capacitance area (A) and a difference between an inverse of a first value of a gate capacitance of the insulated gate device, that is when the device is off and an inverse of a second value of the gate capacitance, that is when the device is on.

18. (Previously Presented) A method of driving an insulated gate semiconductor device, the device comprising an insulation layer at a gate thereof providing a capacitance which varies between an initial value when the device is off and a final value when the device is on, the method comprising the step of depositing at least a Miller charge on the gate while the capacitance has said initial value.

19. (Previously Presented) A method as claimed in claim 18 comprising the step of depositing substantially sufficient charge for a desired steady state switched on state of the device on the gate while the capacitance has said initial value.